

539,273

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 March 2005 (10.03.2005)

PCT

(10) International Publication Number
WO 2005/021779 A1

- (51) International Patent Classification⁷: **C12Q 1/00**, 1/34, G01N 33/53
- (21) International Application Number: PCT/US2004/028238
- (22) International Filing Date: 30 August 2004 (30.08.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 10/652,732 29 August 2003 (29.08.2003) US
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US 10/652,732 (CIP)
Filed on 29 August 2003 (29.08.2003)
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US (patent), UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
- with international search report
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MASS SPECTROMETRY METHODS FOR SIMULTANEOUS DETECTION OF METABOLIC ENZYME ACTIVITY AND METABOLITE LEVELS

(57) **Abstract:** The present invention provides a method for detecting a metabolic disorder in an individual. The method involves (a) contacting a sample containing (i) one or more metabolically indicative enzymes and (ii) one or more metabolic analytes, with one or more substrates for said one or more enzymes to produce a reaction admixture, under conditions in which at least one of said enzymes is capable of acting on a corresponding substrate to generate at least one product; (b) contacting said reaction admixture with a reagent that inhibits the ability of said one or more enzymes to act on a corresponding substrate, wherein said one or more metabolic analytes and said at least one product are soluble in said reagent; to produce a test sample and (c) determining the presence or amount of said one or more metabolic analytes and said at least one product contained in said test sample using mass spectrometry, wherein a determined presence or amount of said one or more metabolic analytes and said at least one product correlates with presence or absence of said metabolic disorder.

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